UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Forest Insect & Disease Management
P.O. Box 5895, Asheville, NC 28803

5230

Report No. 77-1-16

July 11, 1977

Mr. John R. Tiller, State Forester
State Commission of Forestry
P.O. Box 287
Columbia, SC 29202

Dear Mr. Tiller:

At the request of Mike Remion, Larry Barber and Iral Ragenovich, Entomologists, visited the Coastal Seed Orchard on May 17, 1977. Ken Woody, orchard manager, reported that insect control on the orchard was less than expected and requested help in evaluating the spray program. The orchard's spray program was discussed in detail. The information obtained is found in Appendix 1.

A spray deposit analysis was made to determine if spray coverage, which is essential for maximum insect control, was satisfactory. Spray cards made from Kromekote(R) paper were affixed to 12-ounce soft drink cans which were then hung from branches in the upper and middle crowns of three slash pine trees (Fig. 1).

Using the orchard's hydraulic sprayer and their normal spray procedure, the trees were sprayed with a red dye solution containing 2 pints Rhodamine dye in 100 gallons of water with 1 pint sticker. After spraying, the cards were allowed to dry and then removed from the trees for observation. Analysis of the cards (Fig. 2) indicated that the normal spray procedure in spraying only one side of each tree was not giving satisfactory coverage.

The test was repeated this time spraying both sides of the crown. Analysis of the spray cards (Fig. 3) indicated a much more thorough and complete coverage.

Observations of the spray procedure itself showed the man operating the spray nozzle at times directed a straight spray stream to the lower and middle crown areas. Coverage with this type of spray stream will be inconsistent with some foliage receiving large amounts of spray and others very little. The correct procedure, as illustrated in Fig. 4 is to direct a straight spray stream to the top of

the tree and then use a mist of fog to cover the foliage in the middle crown. Little or no spray should be directed toward the lower crown because few cones are produced there.

Neal Overgaard, Entomologist, has determined that to completely drench a 30-foot loblolly pine about 4 gallons of spray mix is needed. Many of the slash pine in the orchard are in the 30- to 40-foot class (Appendix 1). In 1976, orchard personnel applied only 2 gallons of spray per tree. Consideration should be given to increasing the spray rate to 5 gallons per tree.

It was also learned that the orchard was using the Guthion(R) formulation 2L. Earlier communication with Chemagro, the manufacturer of Guthion(R), indicated that with this formulation the active ingredient may crystallize and settle out from the solvent system if the concentrate is stored below 55°F. Changing to the 2S formulation will eliminate this potential problem. Present stocks of 2L that have been stored below 55°F. should be agitated before adding to water. Agitate the concentrate cans by rolling them on the ground before they are opened. This, of course, needs to be done when temperatures are in the 70-90°F. range. This will remix the active ingredient with the solvent system.

In summary, recommendations are as follows:

1. Spray both sides of each cone bearing tree.
2. Concentrate on spraying the upper and middle third of each tree crown.
3. Use the Guthion(R) 2S formulation.
4. Use about 5 gallons of spray mix for trees in the 30-40-foot class.
5. Continue to emphasize to orchard personnel the importance of using a wide angle or mist spray on the middle or lower branches.
6. Use a sticker.

I feel that adopting the above recommendations will help to improve cone and seed insect control on the Coastal Seed Orchard. If you have any comments or questions concerning any of the recommendations or comments, please let us know.

Sincerely,

Harold W. Flake

HAROLD W. FLAKE
Field Office Representative

cc: Mike Remion, SC Div. Forestry
Ken Woody, Coastal Nursery
Hertel
Toko

Figure 1. Spray cards made from Kromekote(R) paper affixed to soft drink cans used to indicate spray coverage.

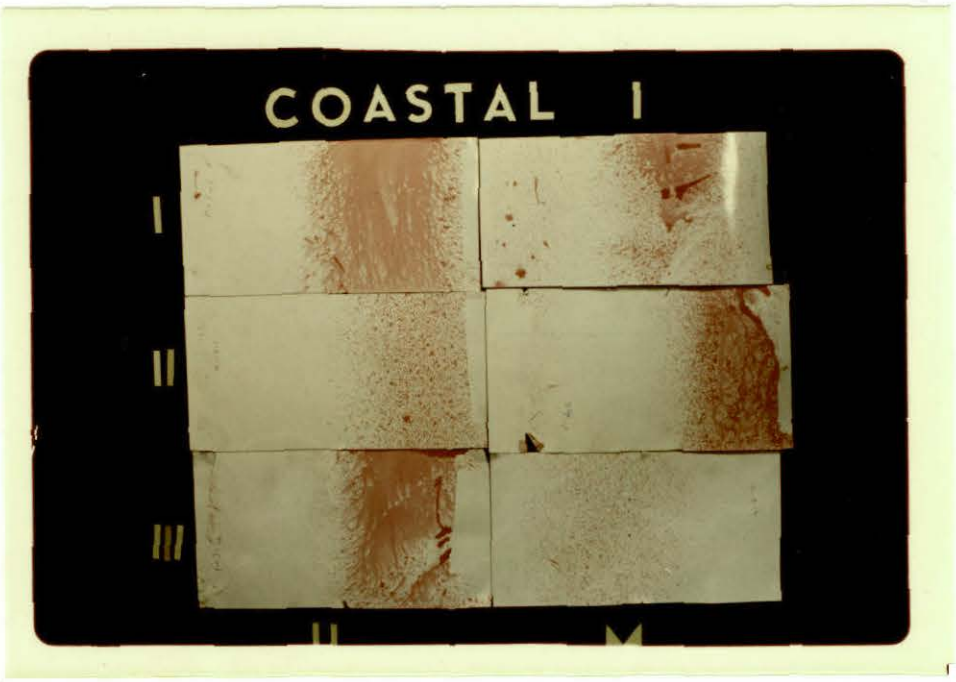

Figure 2. Spray coverage during first run using hydraulic sprayer and spraying only one side of each tree. Spray cards placed in three trees within the upper (U) and middle (M) crowns.

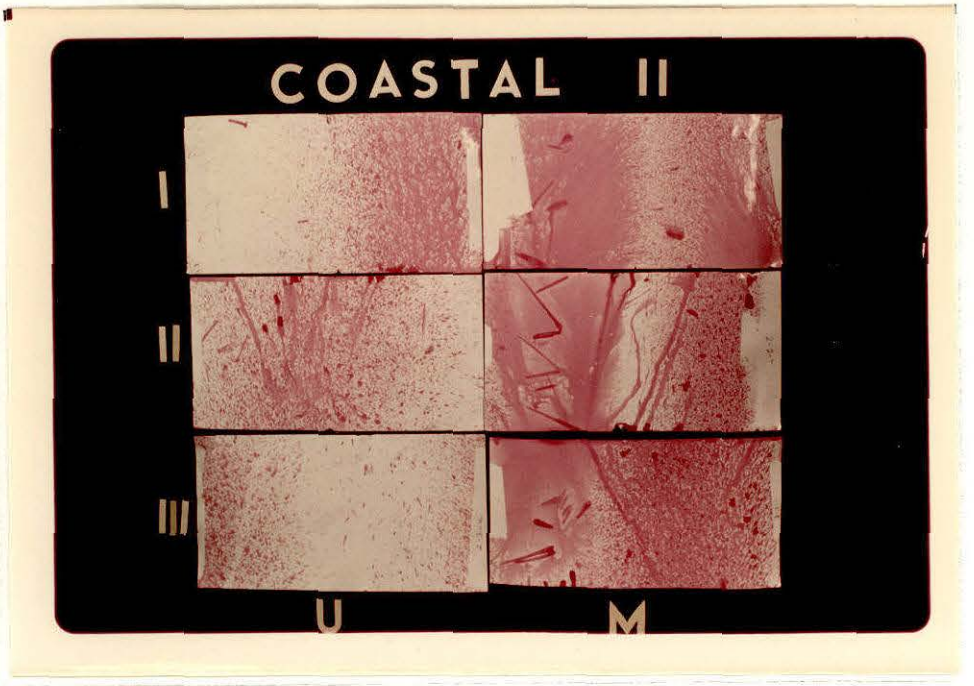

Figure 3. Spray coverage during second run in which both crown faces were sprayed. Spray cards placed in three trees within the upper (U) and middle (M) crowns.

Figure 4. Spray application showing correct nozzle adjustment (mist) for spraying the middle crown area.

Appendix 1. Background information for the Coastal Seed Orchard, St. George, S. C., spray deposit eveluation, May 1977

Parameters	Coastal Seed Orchard
Row spacing	30 ft.
Tree spacing	15 ft. (partially rouged)
Trees/acre	58
Tree species	Slash
Tree height (max.)	38 ft.
Sprayer type	Hydraulic - high volume
Nozzles	1 - variable adjustment
Pressure	400 PSI
Application per tree	2 gallons
Recommended per tree	5-10 gallons
Applications/yr.	6 maximum
Chemical formulation used	Guthion 2L
Recommended formulation	Guthion 2S
Spray mix	6 pints/100 gallons water
Spray concentration	.2%
Sides of trees sprayed	2 1/
Total Guthion(R)/season/acre (rate/tree X No. tree/acre X frequency of spraying)	
@ 2 gal./tree	10.44 lbs. AI/AC/YR
Recommended 5 gal./tree	26.1 lbs. AI/AC/YR

1/ Only one side was sprayed in 1976.